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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,861	05/23/2001	Vetle Vinje	RR-482	9924

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EXAMINER	
LE, TOAN M	

ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 02/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/863,861	Applicant(s) VINJE, VETLE	
	Examiner Toan M Le	Art Unit 2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7 and 13-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 7, and 13-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claim 1, in lines 8-10, " and based on these reflectors and the seismic velocities, a depth model is established in the computer, and one of the reflectors in the depth model is chosen to be the target reflector", it is not clear pointing out what is a depth model and how the depth model is established based on the reflectors and the seismic velocities.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7, and 13-29 are rejected under 35 U.S.C. 102(b) as being anticipated by "Multiple Weights in Diffraction Stack Migration", Tygel et al. (Referring hereafter Tygel et al.).

Referring to claims 1, 7, and 23, Tygel et al. disclose a method and a computer usable medium having computer readable program code incorporated into the method for finding the Reflection Coefficient (RC) of reflectors in the subsurface of the ground (abstract), the method comprising: a) migrating to depth recorded traces in a survey by Pre-Stack Depth Migration (PSDM), using shot/receiver pairs, thereby achieving a real depth migrated seismic cube $P_{obs}(x)$ which is a function of the recorded traces that have each been given a weight $w_i(x)$; b) interpreting $P_{obs}(x)$ to find the spatial positions of the reflectors in the subsurface, and based on these reflectors and the seismic velocities, a depth model is established in the computer, and one of the reflectors in the depth model is chosen to be the target reflector (pages 1821-1822, section Diffraction-Stack Migration Theory, equation 1; figures 1-2); c) computing synthetic traces from the target reflector for all shot/receiver pairs in the survey that was used in a); d) setting the RC of the target reflector in the depth model to an essentially constant value when the synthetic traces are computed; e) doing a local PSDM of the synthetic traces in a band around the target reflector to obtain a model PSDM cube $P_{Mod}(x)$; and f) measuring the amplitudes along target reflector on the real PSDM cube $P_{obs}(x)$, dividing these measurements by the corresponding measurements from the modeled PSDM cube $P_{Mod}(x)$, thereby obtaining an estimate of the angle dependent RC with corresponding reflection angle and weight function (pages 1825-1827, sections Synthetic Example in 2-D and Conclusions; figures 4-6 and 11; equations 3 and 5).

As to claims 13, 18, and 24, Tygel et al. disclose a method and a computer usable medium having computer readable program code incorporated into the method for finding the Reflection Coefficient (RC) of reflectors in the subsurface of the ground, wherein the RC in d) is set to 1.0 in the calculation of the synthetic traces (page 1825, second paragraph).

Referring to claims 14, 19, and 25, Tygel et al. disclose a method and a computer usable medium having computer readable program code incorporated into the method for finding the Reflection Coefficient (RC) of reflectors in the subsurface of the ground, wherein the same weights $w_i(x)$ in the PSDM in a) are used in the local PSDM in e) (page 1823 section Three Fundamental Weights; and page 1825, second paragraph).

As to claims 15, 20, and 26, Tygel et al. disclose a method and a computer usable medium having computer readable program code incorporated into the method for finding the Reflection Coefficient (RC) of reflectors in the subsurface of the ground, wherein "square" method or "norm" method is used for measuring the amplitudes in f) (equations 1, 3, and 5).

Referring to claims 16, 21, and 27, Tygel et al. disclose a method and a computer usable medium having computer readable program code incorporated into the method for finding the Reflection Coefficient (RC) of reflectors in the subsurface of the ground, wherein the process in a)-f) is repeated for points along the target reflector to create a map of the RC for the target reflector (page 1825, section Synthetic Example in 2-D; figures 4-6 and 11).

As to claims 17, 22, and 28, Tygel et al. disclose a method and a computer usable medium having computer readable program code incorporated into the method for finding the Reflection Coefficient (RC) of reflectors in the subsurface of the ground, wherein the synthetic traces in c) are computed by ray tracing (figures 6-7).

Referring to claim 29, Tygel et al. disclose a method and a computer usable medium having computer readable program code incorporated into the method for finding the Reflection Coefficient (RC) of reflectors in the subsurface of the ground, wherein a map is produced by multidimensional plotting (figures 1-2 and 11).

Remarks:

Response to Arguments

Applicant's arguments with respect to claims 1 and 7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Angle-Dependent Reflectivity by Means of Pres-tack Migration", de Bruin et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M Le whose telephone number is (703)305-4016. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703)305-4816. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-0956.

Toan Le

February 14, 2003

EDWARD LEFKOWITZ
SUPERVISORY PATENT EXAMINER
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